Global Flood Monitoring Using GPM IMERG

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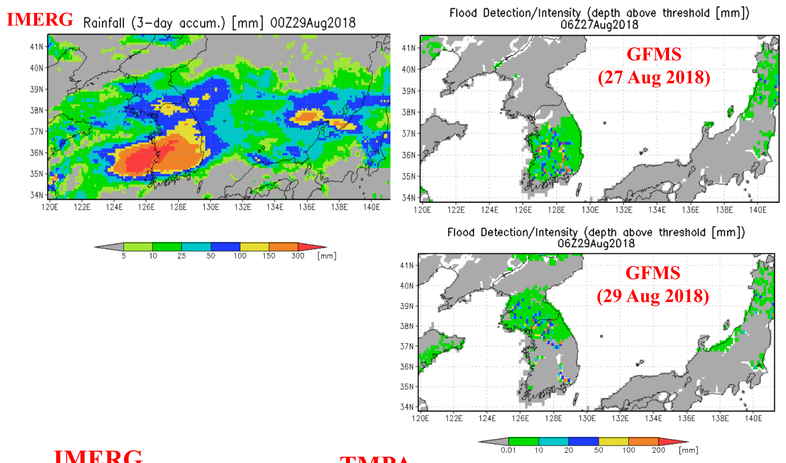
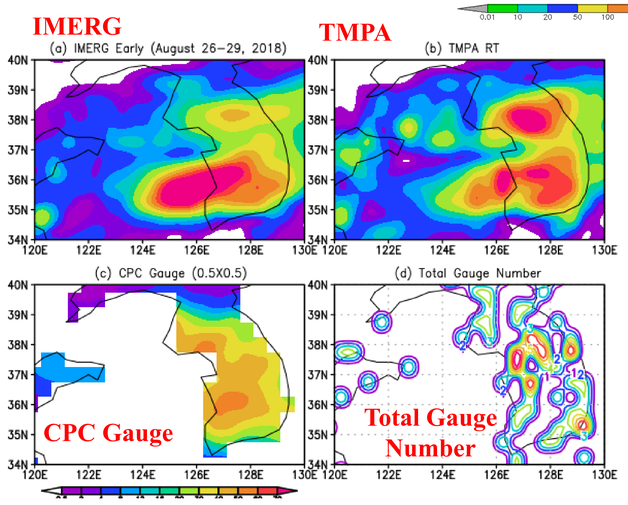
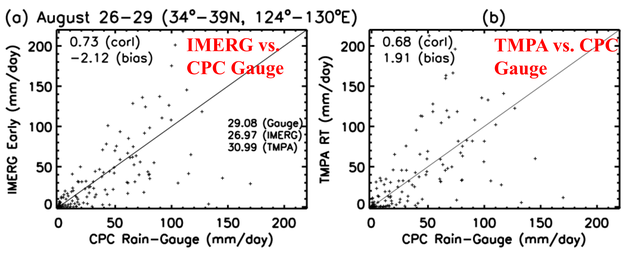
Objective

➢ ***Evaluate the skills of the Global Flood Monitoring System (GFMS) with GPM IMERG precipitation in monitoring global flood events using the two recent flood cases: (i) flooding over Korean Peninsula, and (ii) Hurricane Florence related floods in southeastern U.S.***

Floods over Korea (26-30 August, 2018)





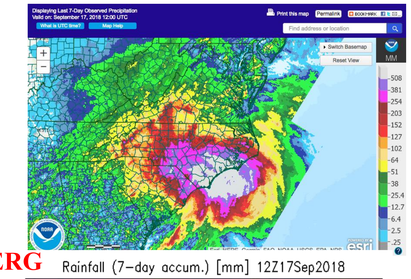


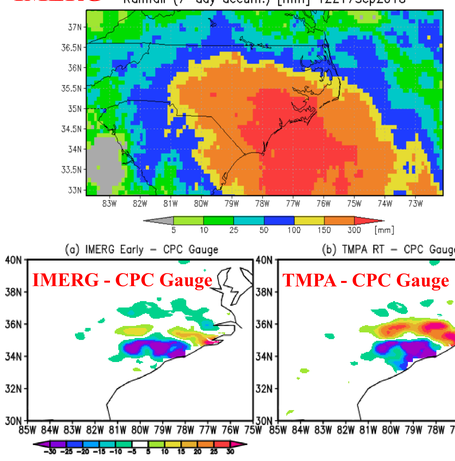
➢ Differences exist between IMERG/TMPA and CPC gauges;

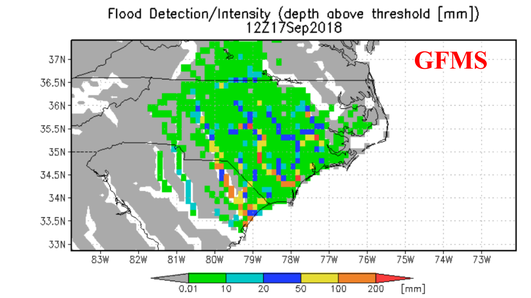
➢ IMERG tends to underestimate, while TMPA overestimates

Hurricane Florence (September 2018)

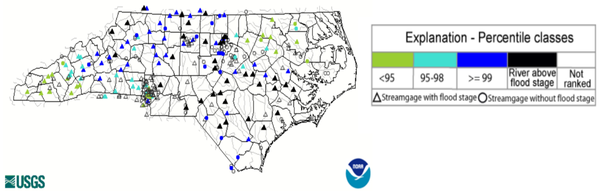
Gauges over Land



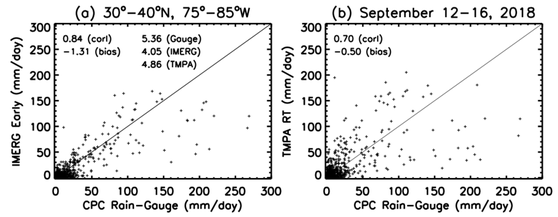




Observed flood and high flow condition (Sep 17, 2018, 10:31ET)

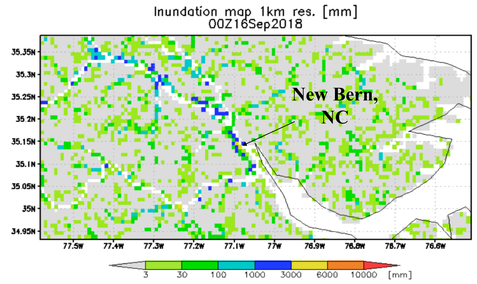


➢ GFMS provides consistent estimates of spatial distributions of floods with the observations

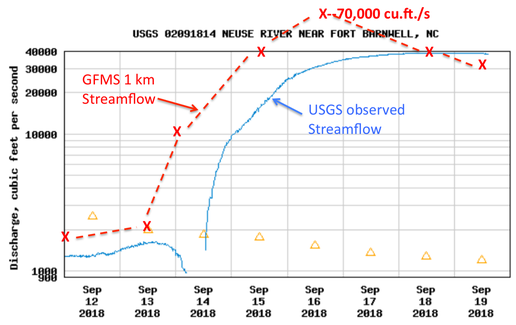


➢ Both IMERG and TMPA underestimate Hurricane Florence-related rainfall compared to CPC gauges

Inundation calculations at 1 km resolution



Streamflow Comparison Upstream of New Bern



➢ GFMS tends to peak earlier with higher maximum flow;

➢ However, integration might equalize the volume calculation to the observation

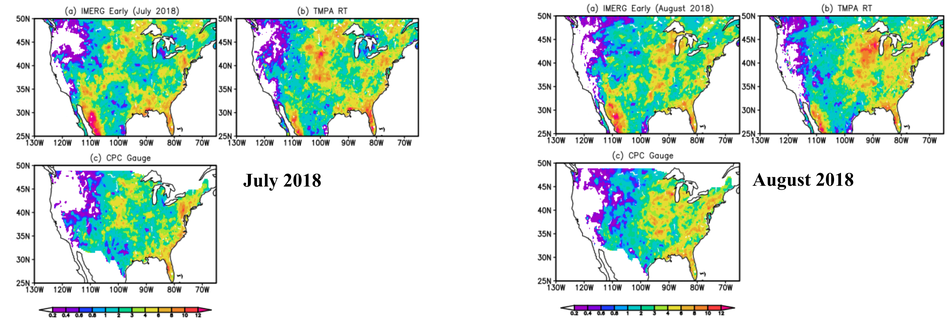
Summary

➢ **GFMS is running with GPM IMERG in quasi-real-time between 50°N-50°S, producing reasonable results by comparing with available surface (streamgauge) observations;**

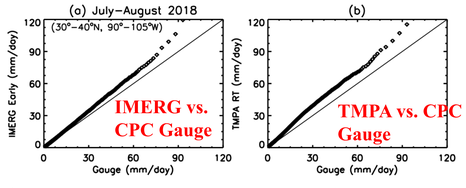
➢ **However, more evaluations and development are necessary to take advantage of the IMERG's resolution and coming improvements;**

➢ **Obvious differences exist between IMERG/TMPA and CPC gauges, either overestimating or underestimating, likely suggesting differing characteristics in different regions**

IMERG-E & TMPA-RT vs. CPC Gauges over U.S. (Jul-Aug, 2018)

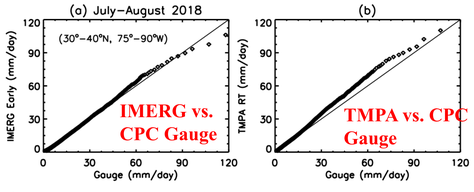


Southwestern U.S.



➢ IMERG and TMPA overestimate rain-rates over southwestern U.S.

Southeastern U.S.



➢ TMPA overestimates rain-rates over southeastern U.S., while IMERG underestimates at high end